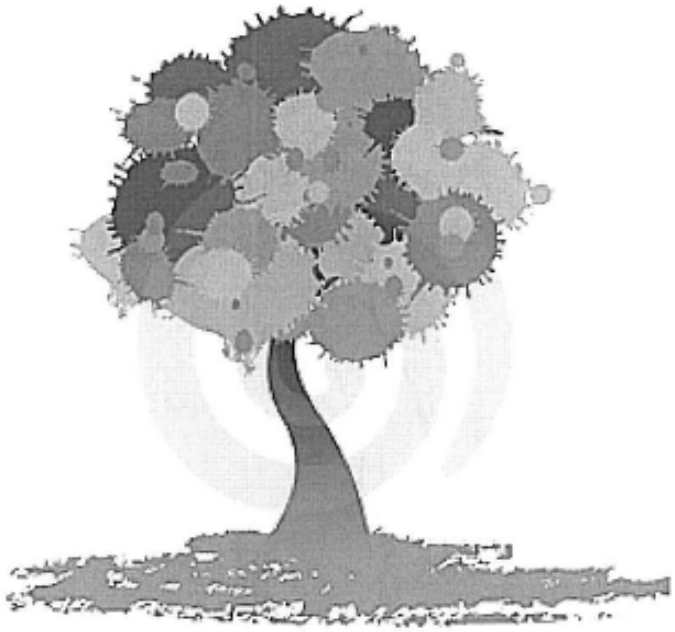
# WATER CONSERVATION IN LANDSCAPING REGULATIONS



CITY OF MOUNTAIN VIEW

COMMUNITY DEVELOPMENT DEPARTMENT

Ref: SH-17

Adopted: 5/25/2010

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# CHAPTER 1
# PURPOSE

The purpose of the Water Conservation in Landscape Regulations is to reduce water waste in landscaping by promoting the use of region-appropriate plants that require minimal supplemental irrigation and by establishing standards for irrigation efficiency.

These regulations supplement the City of Mountain View's Zoning Ordinance (Title 36 of the Municipal Code) by providing detailed requirements for landscaping and irrigation systems for select new and rehabilitated landscape areas. These regulations further the City's current water conservation efforts, reduce future water demands and comply with State water conservation requirements.

# CHAPTER 2
# APPLICABILITY

A. The provisions of these regulations apply to the following:

1. New and/or rehabilitated landscaping associated with any project requiring a Zoning Permit, where the affected landscape area is 1,000 square feet or greater.

2. New and/or rehabilitated landscape projects at City facilities where the affected landscape area is 1,000 square feet or greater.

B. The provisions of these regulations shall not apply to the following:

1. Any project requiring a Zoning Permit, or at a City facility, where new and/or rehabilitated landscaping is less than 1,000 square feet.

2. Registered local, State or Federal historical sites where landscaping establishes a historical landscape style as determined by a public board, committee or commission responsible for architectural review or historic preservation.

3. Ecological restoration projects that do not require a permanent irrigation system.

4. Community gardens, demonstration gardens or plant collections open to the public.

5. Any commercial cultivation of agricultural products; including, but not limited to, products of farms, orchards, production nurseries and forests.

## CHAPTER 3
## DEMONSTRATION OF LANDSCAPE WATER EFFICIENCY

Applicants of projects subject to these regulations may choose one of the following two options to demonstrate that a landscape proposal meets the water efficiency goals of these regulations. In both cases, applicants must meet all other applicable design criteria listed in Chapter 4 (Water-Efficient Design Elements) and all maintenance requirements listed in Chapter 5 (Landscape and Irrigation Maintenance). Demonstration of landscape water efficiency shall only be for the affected landscape area under review and not total available landscape area.

A. **Plant-Type Restriction Option:** The Landscape Project Submittal and any accompanying documentation must demonstrate all of the following as a means of achieving water efficiency. In addition, all other applicable design criteria of Chapter 4 (Water-Efficient Design Elements) shall be met:

1. The total area of high-water-use plants (e.g., turf and water features) shall not exceed 25 percent of the landscape area.

2. At least 80 percent of the remaining landscape area shall be native plants or low-water-using plants.

B. **Water Budget Option:** Project applicants may elect to prepare a Water Budget Calculation, per the provisions of Chapter 10 (Water Budget Calculation), as a means of demonstrating water efficiency.

## CHAPTER 4
## WATER-EFFICIENT DESIGN ELEMENTS

The elements of a landscape design shall be designed to achieve water efficiency consistent with the intent of these regulations. Applicants of projects subject to these regulations shall demonstrate water efficiency through the preparation of a Landscape Project Submittal, pursuant to Chapter 6 (Components of a Landscape Project Submittal).

A. **Plant Material:**

1. Plants shall be chosen and arranged appropriately based upon the site's climate, soil characteristics, sun exposure and other factors. Plants with similar water needs shall be grouped (within hydro zones).

2. The total area of high-water-use plants (e.g., turf and water features) shall not be more than 25 percent of the landscape area, unless a Water Budget Calculation is developed and the estimated total water use (ETWU) of the landscape area does not exceed the maximum applied water allowance (MAWA).

3. A minimum of 80 percent of the remaining landscape area shall be native plants or low-water-using plants, unless a Water Budget Calculation is developed and the ETWU of the landscape area does not exceed the MAWA.

4. Turf shall not be planted on slopes greater than 25 percent, except as part of a defined amphitheater.

5. Turf areas shall not be less than eight feet (8') wide, unless irrigated with subsurface irrigation or other low-volume irrigation system.

6. The horticultural attributes of plant species (e.g., mature plant size, invasive roots, structural attributes) shall be considered in order to minimize the potential for damage to property or infrastructure (e.g., buildings, septic systems, sidewalks, power lines).

7. Fire-prone plant materials and highly flammable mulches are strongly discouraged.

8. Installation of invasive plant species and noxious weeds is strongly discouraged.

9. The architectural guidelines, conditions, covenants or restrictions (CC&Rs) of a common-interest development shall not supersede these regulations by either prohibiting low-water-use plants or including conditions that have the effect of restricting the use of low-water-use plants and/or irrigation systems.

B. **Irrigation System:** An irrigation system shall meet all the requirements listed in this chapter and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management and maintenance. Single-family residential projects that are submitted by or for an individual homeowner are not required to have irrigation systems (i.e., hand-watering is allowed). In addition:

1. Dedicated landscape water meters shall be required for landscape areas greater than 2,500 square feet (5,000 square feet for single-family homes).

2. All irrigation systems shall be equipped with automatic irrigation controllers utilizing weather or soil-moisture data.

3. Rain-sensing shutoff devices, either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems.

4. The irrigation hardware for each hydro zone shall have a separate valve. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers and turf.

5. The irrigation system shall be designed to prevent runoff, low head drainage, overspray or other similar conditions.

6. Low-volume irrigation shall be required in the following areas: on slopes greater than 25 percent (except in defined amphitheaters), within twenty-four inches (24") of a nonpervious surface (except adjacent to internal pathways) or in any narrow or irregularly shaped area that is less than eight feet (8') in width in any direction.

7. Average irrigation efficiency is assumed to be 70 percent. Irrigation systems shall be designed, maintained and managed to meet or exceed an average landscape irrigation efficiency of 70 percent.

8. Irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. in order to prevent evaporative water loss from irrigation, unless unfavorable weather prevents it or otherwise renders irrigation unnecessary. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

C. **Mulch:**

1. A minimum three-inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas in order to prevent evaporative water loss from exposed soil, except in areas of direct seeding application (e.g. hydroseed).

D. **Hydro Zones:**

1. Hydro zones shall group plant materials of similar water use and shall generally demarcate areas of similar slope, sun exposure, soil and other site conditions appropriate for the selected plants.

2. The flow of water to each hydro zone shall be controlled by a separate valve.

3. Sprinkler heads and other water emission devices shall be selected based on what is appropriate for the plant type within that hydro zone.

4. Within a hydro zone, low- and moderate-water-use plants may be mixed, but all plants within that hydro zone shall be classified as moderate water use for MAWA calculations. High-water-use plants shall not be mixed with low- or moderate-water-use plants.

E. **Water Features:**

1. Recirculating water systems shall be used for water features.

2. The wet-surface area of a water feature shall be counted as an area of high-water-using plants for purposes of the plant-type restriction and the water budget calculation.

3. Pool and spa covers are highly recommended to prevent evaporative water loss from the exposed water surface.

## CHAPTER 5
## LANDSCAPE AND IRRIGATION MAINTENANCE

Landscapes shall be maintained to ensure successful establishment following installation and to ensure the efficient use of water consistent with these regulations.

A. Maintenance shall include, but not be limited to, the following: routine inspection; pressure testing, adjustment and repair of the irrigation system; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; replanting of failed plants; weeding; pest control; and removing obstructions to water emission devices.

B. Failed plants shall be replaced with the same or functionally equivalent plants that may be size-adjusted as appropriate for the stage of growth of the overall installation. Failing plants shall either be replaced or be revived through appropriate adjustments in water, nutrients, pest control or other factors as recommended by a landscaping professional.

C. Failed irrigation hardware components shall be replaced with the same or functionally equivalent components.

## CHAPTER 6
## COMPONENTS OF A LANDSCAPE PROJECT SUBMITTAL

The Landscape Project Submittal for all projects subject to these regulations shall contain the following items and shall be submitted to the City of Mountain View Planning Division as part of the zoning permit application:

A. **Water-Efficient Design and Maintenance Checklist** (Chapter 8).

B. **Landscape and Irrigation Design Plans** (Chapter 9).

C. **Water Budget Calculation** (Chapter 10). Not required if plant-type restriction option is utilized.

D. **Certification of Installation** (Chapter 11). Shall be submitted following installation of landscaping materials and irrigation hardware.

## CHAPTER 7
## PREPARATION OF A LANDSCAPE PROJECT SUBMITTAL

The Landscape Project Submittal for all projects subject to these regulations shall be prepared by the following individual(s):

A. For a project with a landscape area of at least 1,000 square feet but less than 2,500 square feet, the Landscape Project Submittal may be prepared by the project applicant or by a certified or authorized professional(s).

B. For a project with a landscape area of 2,500 square feet or greater, the Landscape Project Submittal must be prepared by a certified or authorized professional(s).

## CHAPTER 8
## WATER-EFFICIENT DESIGN AND MAINTENANCE CHECKLIST

A completed water-efficient design and maintenance checklist is required of all projects subject to these regulations. The checklist shall serve as a self-certification of consistency with the water-efficiency requirements of these regulations.

# CHAPTER 9
# LANDSCAPE AND IRRIGATION DESIGN PLANS

Landscape and Irrigation Design Plans are required of all projects subject to these regulations. The Landscape and Irrigation Design Plans shall be prepared as follows:

A. Landscape and Irrigation Design Plans shall incorporate all applicable elements of Chapter 4 (Water-Efficient Design Elements).

B. The landscape design portion of the Landscape and Irrigation Design Plans, at a minimum, shall:

1. Provide basic project information, such as applicant name, project contacts, site address, total landscape area, total turf area and irrigation water source (e.g. municipal, recycled).

2. Identify, in table form, all plants to be installed as part of the project. The table shall include the following:

   i. Symbol (representing the plant on the plan).

   ii. Common name.

   iii. Botanical name.

   iv. Container size.

   v. Quantity.

   vi. Type (e.g. grass, succulent, vine, shrub, tree).

   vii. Water-efficient species identification. All "native" and "low-water-use" plant species (defined in Chapter 17) shall be labeled.

   viii. Unique physical specifications of plants (e.g., bare-root, field-potted, multi-trunk), if applicable.

3. Delineate and label each hydro zone.

4. Identify each hydro zone as low water, moderate water, high water, or mixed (low/moderate) water use.

5. Identify special landscape areas.

6. Identify type of mulch and application depth.

7. Identify type and wet-surface area of water features.

8. Identify hardscapes (pervious and nonpervious).

C. The irrigation design portion of the Landscape and Irrigation Design Plans, at a minimum, shall contain:

1. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture-sensing devices, rain sensors, quick couplers, pressure regulators and backflow prevention devices.

2. Static water pressure at the point of connection to the public water supply.

3. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station.

4. Irrigation schedule.

5. Location and size of separate water meters for landscape (if applicable).

D. **Grading.** If the landscape area will be graded, then, at a minimum, grading contours and quantities shall be shown on the landscape portion of the Landscape and Irrigation Design Plans. Grading shall meet all applicable requirements of the City of Mountain View Standard Design Criteria.

E. **Storm Water Management.** Storm water Best Management Practices shall be incorporated, as appropriate, into the landscape installation, the details of which shall be shown on the landscape portion of the Landscape and Irrigation Design Plans. Installation shall be subject to the City of Mountain View's National Pollutant Discharge Elimination System (NPDES) storm water discharge permit requirements.

## CHAPTER 10
## WATER BUDGET CALCULATION

A Water Budget Calculation worksheet will be developed by the City of Mountain View and provided by the Planning Division to all project applicants. Applicants may elect to complete a Water Budget Calculation for the project. When a Water Budget is prepared

for landscape areas equal to or greater than 2,500 square feet, it must be completed by a certified or authorized professional. A Water Budget Calculation shall adhere to the following requirements:

A. The plant factor shall be based on the species evaluation list from the Water Use Classification of Landscape Species (WUCOLS), and shall be 0.3 for low-water-use plants, 0.5 for moderate-water-use plants and 0.8 for high-water-use plants.

B. The wet-surface area of a water feature shall be counted as an area of high-water-using plants for purposes of a Water Budget Calculation.

C. Where low- and moderate-water-use plants are to be mixed within a single hydro zone, the entire hydro zone area shall be classified as moderate water use for purposes of a Water Budget Calculation. High-water-use plants shall not be mixed with low- or moderate-water-use plants.

D. All special landscape areas (SLA) shall be identified and their water use included in the Water Budget Calculation.

E. The reference evapotranspiration adjustment factor (ETAF) for SLAs shall not exceed 1.0. The ETAF for the remaining landscaped area shall not exceed 0.7.

F. Irrigation system efficiency shall be greater than or equal to 70 percent.

G. MAWA shall be calculated using the equation below:

Use this section only if the project includes a Special Landscape Area

$$MAWA = (ETo)\ (0.62)\ [(0.7 \times LA) + (0.3 \times SLA)]$$

Where:

| | | |
|---|---|---|
| MAWA | = | Maximum Applied Water Allowance (gallons per year) |
| ETo | = | Reference Evapotranspiration (inches per year) |
| 0.62 | = | Conversion Factor (inches per square foot to gallons) |
| 0.7 | = | Reference Evapotranspiration Adjustment Factor (ETAF) |
| LA | = | Landscape Area including SLA (square feet) |
| 0.3 | = | Additional Water Allowance for SLA |
| SLA | = | Special Landscape Area (square feet) |

An ETo of 43" per year shall be used in Water Budget Calculations for all projects located within the City of Mountain View.

H. ETWU shall be calculated for each hydro zone using the equation below. The sum of the ETWU calculated for all hydro zones shall not exceed the MAWA.

$$ETWU = (43)(0.62)\left(\frac{PF \times HA}{IE}\right) + (43)(0.62)(SLA)$$

Use this section only if the project includes a Special Landscape Area

Where:

| | | |
|---|---|---|
| ETWU | = | Estimated Total Water Use per year (gallons per year) |
| ETo | = | Reference Evapotranspiration (inches per year) |
| PF | = | Plant Factor from WUCOLS |
| HA | = | Hydro Zone Area [high-, medium-, low- and mixed-water-use areas] (square feet) |
| SLA | = | Special Landscape Area (square feet) |
| 0.62 | = | Conversion Factor (inches per square foot to gallons) |
| IE | = | Irrigation Efficiency (minimum 0.70) |

An ETo of 43" per year shall be used in Water Budget Calculations for all projects located within the City of Mountain View.

## CHAPTER 11
## CERTIFICATION OF INSTALLATION

A completed Certification of Installation form, provided by the Planning Division, shall be submitted to the Planning Division for all projects within 60 days of installation of the landscape material and irrigation hardware. The Certification of Installation shall verify the following: inspection to confirm that the landscaping and irrigation system was installed as specified in the landscape and irrigation design plan; system test with distribution uniformity; system tune-up to reduce overspray or runoff that causes overland flow; and preparation of a recommended irrigation schedule.

## CHAPTER 12
## AUDIT OF EXISTING LANDSCAPES

The City of Mountain View shall be authorized to require irrigation audits to evaluate water use on established landscapes larger than one (1) acre. Such audits may also be initiated as a coordinated effort between the City of Mountain View and another entity (e.g., Santa Clara Valley Water District or the Bay Area Water Supply and Conservation Agency), as part of an established outdoor water conservation program. When an irrigation audit is required, it must be completed by a certified landscape irrigation auditor.

## CHAPTER 13
## PUBLIC EDUCATION

A. The City of Mountain View shall provide to all project applicants and members of the public information regarding the design, installation, management and maintenance of water-efficient landscapes and irrigation systems.

B. All model homes that are landscaped shall have signs installed that provide information identifying the common and biological names of plants and the principles of water-efficient landscaping used at the site.

## CHAPTER 14
## PENALTIES

The penalties for violations set forth in Sections 1.7 and A36.92.050 of the City of Mountain View Municipal Code shall apply to violations of the provisions of these regulations.

## CHAPTER 15
## EXCEPTIONS

Exceptions to these regulations shall be subject to review and approval by the City Council.

## CHAPTER 16
## RELATIONSHIP TO THE ZONING ORDINANCE

Standards stated in the Zoning Ordinance (Title 36 of the Mountain View Municipal Code) that are not specified in this section shall remain applicable. In the case of conflict between these regulations and the Zoning Ordinance, the standards contained herein shall govern.

## CHAPTER 17
## DEFINITIONS

The definitions of terms in this Chapter shall apply wherever these terms appear within these regulations.

**Applied Water.** The portion of water supplied by the irrigation system to the landscape.

**Amphitheater.** An open-air venue for sports, concerts or theatrical performances.

**Automatic Irrigation Controller.** An automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

**Backflow Prevention Device.** A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

**Certified Irrigation Designer.** A person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the U.S. Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

**Certified Landscape Irrigation Auditor.** A person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the U.S. Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

**Certified or Authorized Professional.** A certified irrigation designer, certified landscape irrigation auditor, licensed landscape architect, licensed landscape contractor, licensed professional engineer or any other person authorized by the State of California to design a landscape, an irrigation system or authorized to complete a water budget.

**Conversion Factor.** The number (0.62) that converts inches per square foot to gallons per square foot.

**Dedicated Landscape Meter.** A water meter used to measure water use in landscape areas. May also include ancillary potable uses such as drinking fountains.

**Ecological Restoration Project.** A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

**Estimated Total Water Use (ETWU).** The total water used for the landscape as described in Chapter 10: Water Budget Calculation.

**Evapotranspiration Adjustment Factor (ETAF).** A factor of 0.7 that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. ETAF for a SLA shall not exceed 1.0.

**Gray Water.** Untreated wastewater of a quality suitable for nonpotable uses (e.g., has not been contaminated by toilet discharge or food products). Gray water includes, but is not limited to, wastewater from bathtubs, showers, bathroom wash basins, clothes washing machines and laundry tubs. Gray water does not include wastewater from toilets, kitchen sinks or dishwashers.

**Hardscape.** Any constructed feature in a landscape built of concrete, stone, wood or other such pervious or nonpervious durable material. Includes, but is not limited to, patios, walkways and retaining walls.

**High-Water-Use Plant.** A plant species classified as "high water use" by WUCOLS, having a regionally adjusted plant factor of 0.7 through 0.9.

**Hydro Zone.** A portion of the landscaped area having plants with similar water needs. A hydro zone may be irrigated or nonirrigated.

**Internal Pathway.** A permeable or nonpermeable hardscape used for walking, driving or biking through a large landscape area.

**Invasive Plant Species.** Species of plants listed in the invasive plant inventory of the California Invasive Plant Council (IPC) that have been identified as invasive to areas within the IPC-delineated Central West (CW) region.

**Irrigation Audit.** An in-depth evaluation of the performance of an irrigation system performed by a certified landscape irrigation auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow and preparation of an irrigation schedule.

**Irrigation Efficiency (IE).** The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of these regulations is 70 percent. Greater irrigation efficiency can be expected from well-designed and maintained systems.

**Landscape Architect.** A person who holds a license to practice landscape architecture in California as further defined by the California Business and Professions Code, Section 5615.

**Landscape Area.** All of the affected planting areas, turf areas and water features in a landscape installation. The landscape area does not include existing plants or water features, footprints of buildings or structures, sidewalks, driveways, parking lots, decks,

patios, gravel or stone walks, pervious or nonpervious hardscapes, and other nonirrigated natural landscape areas (e.g., existing wild-land vegetation).

**Landscape Contractor.** A person licensed by the State of California to construct, maintain, repair, install or subcontract the development of landscape systems.

**Lateral Line.** The water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

**Low-Water-Use Plant.** A plant species whose demonstrated water needs are compatible with local climate and soil conditions such that regular supplemental irrigation is not required to sustain the plant after it has become established. Species classified as "very low-water-use" and "low-water-use" by WUCOLS, having a regionally adjusted plant factor of 0.0 through 0.3, shall be considered low-water-use plants.

**Low-Volume Irrigation.** The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines and bubblers. Low-volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**Maximum Applied Water Allowance (MAWA).** The upper limit of annual applied water for the established landscaped area as specified in Chapter 10 (Water Budget Calculation).

**Model Home.** A home or group of homes used to display homes for sale in a subdivision. A model home is used to show the living space and features of different models of homes available to the consumer.

**Mulch.** Any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature and preventing soil erosion.

**Native Plant.** A plant indigenous to a specific area of consideration. For the purpose of these regulations, the term will refer to plants indigenous to the coastal ranges of Central and Northern California, and more specifically to such plants that are suited to the ecology of the present or historic natural community of the project's vicinity.

**Nonpotable Water.** Includes recycled water, gray water or rainwater. For the purposes of these regulations, nonpotable water does not include private groundwater supplies.

**Noxious Weed.** Any weed designated by the weed control regulations in the Weed Control Act and identified on a regional district noxious weed control list.

**Operating Pressure.** The pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

**Overspray.** Irrigation water that is delivered beyond the target area.

**Plant Factor.** A numerical factor, when multiplied by reference evapotranspiration (ETo), estimates the amount of water needed by plants. Plant factors are based on the publication "Water Use Classification of Landscape Species" (WUCOLS).

**Project Applicant.** The individual or entity submitting a Landscape Project Submittal. A project applicant may be the property owner or his or her designee.

**Rain Sensor or Rain-Sensing Shutoff Device.** A component that automatically suspends an irrigation event when it rains.

**Recycled Water.** Treated wastewater of a quality suitable for nonpotable uses, including landscape irrigation and water features.

**Reference Evapotranspiration (ETo).** A standard measurement of environmental parameters that affect the water use of plants. ETo is an estimate of the evapotranspiration of a large field of four-inch (4") to seven-inch (7") tall, cool-season grass that is well-watered. For the purpose of a Water Budget Calculation, an ETo of 43" shall be used for projects located within the City of Mountain View.

**Rehabilitated Landscape.** Modification of existing landscapes; includes any area where new landscape is installed.

**Runoff.** Water that is not absorbed by the soil or landscape to which it is applied and flows from the landscape area.

**Single-Family Home.** A detached building designed for and/or occupied exclusively by one family.

**Soil Moisture Sensor.** A device that measures the amount of water in the soil.

**Special Landscape Area (SLA).** An area of the landscape dedicated solely to edible plants, areas irrigated with nonpotable water, water features using nonpotable water and areas dedicated to active play such as parks, sports fields, golf courses and where turf provides a playing surface. Front and back lawns of private residences are not considered Special Landscape Areas.

**Sprinkler Head.** A device that delivers water through a nozzle.

**Station.** An area served by one valve or by a set of valves that operate simultaneously.

**Turf.** A ground cover surface consisting of nonnative grass species that is customarily mowed. Annual bluegrass, Kentucky bluegrass, perennial ryegrass, red fescue and tall fescue are examples of cool-season turf grasses. Bermuda grass, kikuyu grass, seashore paspalum, St. Augustine grass, zoysia grass and buffalo grass are warm-season turf grasses.

**Valve.** A device used to control the flow of water in the irrigation system.

**Water Feature.** A landscape design element where open water performs an aesthetic or recreational function. Water features include swimming pools, spas, ponds, fountains, waterfalls and artificial streams. Water features do not include manually operated water play areas in public parks.

**Wet-Surface Area.** The surface area of that portion of a water feature that functions to contain water, such as the water surface of a swimming pool, spa or garden pond. For a fountain or other feature with flowing water, wet-surface area shall be measured as a two-dimensional plane bounded by the perimeter of the area where water has been designed to flow.

**WUCOLS.** The "Water Use Classification of Landscape Species" published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

**Zoning Permit.** A legal document that gives permission for a use or development on a particular piece of land, including, but not limited to, Development Review Permits, Planned Unit Development Permits, Planned Community Permits and Conditional Use Permits.

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CITY OF MOUNTAIN VIEW

# WATER CONSERVATION IN LANDSCAPING REGULATIONS "GETTING STARTED"

The following steps are intended to help you get started with the City of Mountain View's new Water Conservation in Landscaping Regulations. In order to fully comply with the regulations, you will need to obtain a complete package from the City of Mountain View Planning Division.

## Step 1: Determine whether you are subject to the regulations.

If your project requires a Planning Permit and has new or rehabilitated landscape area of 1,000 square feet or more, your project is likely subject to the Water Conservation in Landscaping Regulations. If your project's affected landscape area is 2,500 square feet or more, you will need the help of a certified or authorized professional to complete the required documentation.

## Step 2: Choose whether to restrict turf area or calculate a water budget.

If your project is subject to the Water Conservation in Landscaping Regulations, you have two options for complying with the regulations. These options are listed below as *Option 1* and *Option 2*. Irrespective of which option you choose, you must also do the following:

A. Adhere to the Water-Efficient Design Elements and Landscape Irrigation Maintenance requirements, and
B. Complete all components of a Landscape Project Submittal.

Details of the Water-Efficient Design Elements, Landscape Irrigation Maintenance requirements and the Landscape Project Submittal can be found in the Water Conservation in Landscaping Regulations.

*Option 1: Plant-type restriction option*
The simplest way to comply with the Water Conservation in Landscaping Regulations is to meet the following two restrictions:

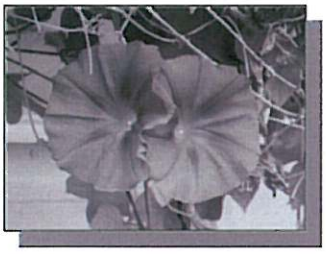
A. High-water-use plants (e.g., turf) may not exceed 25 percent of the landscape area, and
B. At least 80 percent of nonturf plantings must be California native or low-water-use plants.

*Option 2: Water budget option*
If you would like more high-water-use plants than is allowed under the plant-type restriction option (*Option 1*), you may elect to complete a Water Budget Calculation instead of complying with the plant-type restriction option. The results of your Water Budget Calculation must demonstrate that your proposed landscape will not use more water than an equivalent-sized landscape with equal parts high-, low-, and moderate-water-use plants. A complete explanation how to prepare a Water Budget Calculation can be found in Chapter 10 of the Water Conservation in Landscaping Regulations and in the Water Budget Calculation Worksheet provided by the City.

## Step 3: Prepare a Landscape Project Submittal.

Your Landscape Project Submittal must contain the following items:

A. Water-Efficient Design and Maintenance Checklist
B. Landscape and Irrigation Design Plans
C. Certification of Installation
D. Water Budget Calculations (if *Option 2* is chosen during Step 2)



A complete description of the required elements of a Landscape Project Submittal is contained in the Water Conservation in Landscaping Regulations.

CITY OF MOUNTAIN VIEW

# WATER-EFFICIENT DESIGN AND MAINTENANCE CHECKLIST

| | | |
|---|---|---|
| Applicant Name: | Phone: | E-mail: |
| Project Site Address: | | |
| Total Landscape Area (square feet): | Turf Area: | Nonturf Plant Area: |
| Special Landscape Area: | Water Feature Wet Surface Area: | |

## Water-Efficient Design

| Parameter | Requirements | Compliance |
|---|---|---|
| **Plantings** | Total area of high water use plantings (including turf and water features) is less than 25 percent of the landscape area | ☐ Yes ☐ No—See Water Budget |
| | At least 80 percent of nonturf area is native or low-water-use plants | ☐ Yes ☐ No—See Water Budget |
| **Turf** | All turf areas are greater than 8' wide (unless irrigated with subsurface irrigation or other low volume irrigation system) | ☐ Yes |
| | All turf is planted on slopes less than 25 percent (except in defined amphitheaters) | ☐ Yes |
| **Hydro Zones** | Plants are grouped by hydro zones | ☐ Yes |
| | Each hydro zone is controlled by a separate irrigation valve | ☐ Yes |
| **Mulch** | At least 3" of mulch is used on exposed soil surfaces | ☐ Yes |
| **Irrigation System** | Designed to avoid overspray and runoff | ☐ Yes |
| | Automatic irrigation controllers (e.g., utilizing weather or soil-moisture data) | ☐ Yes |
| | Rain sensor shutoffs | ☐ Yes |
| | No overhead irrigation is used in the following locations: on slopes greater than 25 percent (except in defined amphitheaters), within 24" of a nonpervious surface (except adjacent to internal pathways), or in any narrow or irregularly shaped area that is less than 8' in width in any direction. | ☐ Yes |
| | System only operates between 8:00 p.m. and 10:00 a.m. | ☐ Yes |
| **Metering** | Separate irrigation meter for landscape areas of 2,500 square feet or more (5,000 square feet for single-family homes) | ☐ Yes ☐ Not Applicable |
| **Water Features** | Recirculating | ☐ Yes ☐ Not Applicable |
| | Pool/spa cover | ☐ Yes ☐ Not Applicable |

I certify that information provided on this checklist is correct and meets the specified requirements of the Water Conservation in Landscaping Regulations.

*Signature of Project Applicant or Authorized Representative* *Date*

## Landscape and Irrigation Maintenance

Pursuant to the City of Mountain View's Water Conservation in Landscaping Regulations, landscapes and irrigation systems shall be maintained to ensure successful establishment following installation, and to ensure the efficient use of water. Maintenance shall be performed regularly and must include, at a minimum, the following components:

| Parameter | Components | |
|---|---|---|
| **Irrigation System** | System check (every six months) | ☐ |
| | Routine inspection (monthly) | ☐ |
| | Adjustment and repair | ☐ |
| | Failed irrigation hardware components shall be replaced with the same or functionally equivalent components | ☐ |
| **Landscape** | Replenish mulch | ☐ |
| | Fertilize | ☐ |
| | Prune | ☐ |
| | Weed control | ☐ |
| | Pest control | ☐ |
| | Aeration and dethatching of turf areas | ☐ |
| | Failed plants shall be replaced with the same or functionally equivalent plants | ☐ |

To the best of my ability, the landscape and irrigation systems installed as part of this project will be maintained on a regular basis and in compliance with the Water Conservation in Landscaping Regulations.

_____ _____

*Signature of Project Applicant or Authorized Representative* *Date*

## Staff Evaluation *(to be completed by City of Mountain View staff)*

| Documentation | Completed by Project Applicant | Completed by Certified or Authorized Professional |
|---|---|---|
| Water-Efficient Design and Maintenance Checklist | ☐ | ☐ |
| Landscape and Irrigation Design Plans | ☐ | ☐ |
| Certification of Installation (submitted within 60 days of installation) | ☐ | ☐ |
| Water Budget Calculation (optional) | ☐ | ☐ |

☐ Single-Family ☐ Multi-Family ☐ Commercial ☐ Institutional ☐ Irrigation Only ☐ Industrial ☐ Other: _____

Number of Units (residential): _____ Number of Meters: _____

| | |
|---|---|
| ☐ Approved<br>☐ Not Approved | **Staff Comments:**<br><br>*Signature:* *Date:* |

CITY OF MOUNTAIN VIEW

# WATER BUDGET CALCULATION WORKSHEET

Applicant Name: Phone: E-mail:

Project Site Address:

This worksheet is an optional element of the Landscape Project Submittal. If your project has elected to use the water budget option, please complete all sections (A, B, and C) of the worksheet. Please refer to the Water Conservation in Landscaping Regulations for definitions of terms used in this worksheet.

## SECTION A. MAXIMUM APPLIED WATER ALLOWANCE (MAWA)

Please complete the information for each hydro zone listed in Table A-1. Use as many tables as necessary to provide the square footage of landscape area per hydro zone. Information entered into this table will be use for the calculations for the Maximum Applied Water Allowance (MAWA) below.

**Table A-1. Hydro Zone Area Information**

| Plant Water Use Type[a] | Plant Type[b] | Hydro Zone Area *square feet* |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Summary of Hydro Zone Area Information**

| Summary Area | | Area *square feet* |
|---|---|---|
| Sum of Low-Water-Use Areas | | |
| Sum of Moderate-Water-Use Areas | | |
| Sum of High-Water-Use Areas | | |
| Sum of Special Landscape Areas | *[use this value for Table A-2]* | |
| Sum of all Landscape Areas | *[use this value for Table A-2]* | |

(a) Plant Water Use Type
HW = High-Water-Use Plants
MW = Moderate-Water-Use Plants (includes mixed moderate-low plants)
LW = Low-Water-Use Plants (includes very low-water-use plants)
SLA = Special Landscape Area

(b) Plant Type
May include categories such as:
- Native garden
- Boxwood
- Roses
- Turf
- Sports Field

## SECTION A. MAXIMUM APPLIED WATER ALLOWANCE (MAWA) (CONTINUED)

The project's Maximum Applied Water Allowance shall be calculated using the following equation:

$MAWA = (43)\ (0.62)\ [(0.7 \times LA) + (0.3 \times SLA)]$

Where:

| | |
|---|---|
| MAWA | = Maximum Applied Water Allowance (gallons per year) |
| 43 | = Reference Evapotranspiration (ETo) for the City of Mountain View (inches per year) |
| 0.62 | = Conversion Factor (to gallons per square foot) |
| 0.7 | = ET Adjustment Factor (ETAF) |
| LA | = Landscaped Area (includes Special Landscape Area; in square feet) |
| 0.3 | = The Additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3) |
| SLA | = Portion of the Landscape Area Identified as Special Landscape Area (square feet) |

Use Table A-2 below to identify the input values for the MAWA calculation.

**Table A-2. Input Values for the MAWA Calculation**

| ETo<br>*inches* | Conversion Factor | Landscape Area (LA)<br>*square feet* | Special Landscape Area (SLA)<br>*square feet* |
|---|---|---|---|
| 43 | 0.62 | *[enter from Table A-1]* | *[enter from Table A-1]* |

Show calculations for the Maximum Applied Water Allowance.

$MAWA = (43)\ (0.62)\ [(0.7 \times LA) + (0.3 \times SLA)]$

Maximum Applied Water Allowance = _____ gallons per year.

## SECTION B. ESTIMATED TOTAL WATER USE (ETWU)

Please complete the plant factor and irrigation system information for your landscape. Use as many tables as necessary. Information entered into the tables below will be use for Estimated Total Water Use (ETWU) calculations below.

**Table B-1. Plant Factor and Irrigation System Information**

| | Plant Water Use Type[a] | Plant Type[b] | Plant Factor (PF)[c] | Hydro Zone Area (HA) *square feet* | Irrigation Method[d] | Irrigation Efficiency (IE)[e] *[minimum of 70%]* |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| *SLA* | SLA | | 1.0 | | | |

(a) Plant Water Use Type
Plant water use types shall be obtained from the species evaluation list in WUCOLS (Region 1)
- HW = High-Water-Use Plants
- MW = Moderate-Water-Use Plants (includes mixed moderate-low plants)
- LW = Low-Water-Use Plants (includes very low-water-use plants)
- SLA = Special Landscape Area

(b) Plant Type
May include categories such as:
- Native garden
- Boxwood
- Roses
- Turf
- Sports Field

(c) Plant Factor
The following plant factors shall be used:
- LW = 0.3
- MW = 0.5
- HW = 0.8
- SLA = 1.0

(d) Irrigation Method
- MS = Micro-spray
- S = Spray
- R = Rotor
- B= Bubbler
- D= Drip
- O = Other (specify)

(e) Irrigation Efficiency
Below are typical irrigation efficiencies:
- MS = 65%
- S = 65% (for turf) or 80% (for shrubs)
- R = 75%
- B = 85%
- D = 85%

The project's Estimated Total Water Use shall be calculated using the following equation:

Use only if the project includes a Special Landscape Area

$$ETWU = (43)(0.62)\left(\frac{PF \times HA}{IE}\right) + (43)(0.62)(SLA)$$

Where:

ETWU = Estimated Total Water Use Per Year (gallons per year)
43 = Reference Evapotranspiration (ETo) for the City of Mountain View (inches per year)
0.62 = Conversion Factor (to gallons per square foot)
PF = Plant Factor
HA = Hydro Zone Area (square feet)
IE = Irrigation Efficiency (minimum 0.7)
SLA = Special Landscape Area (square feet)

## SECTION B. ESTIMATED TOTAL WATER USE (ETWU) (CONTINUED)

Show calculations for the ETWU below (use as many pages as necessary).

$$ETWU_1 = (43)(0.62)\left(\frac{PF_1 \, x \, HA_1}{IE_1}\right) =$$

$$ETWU_2 = (43)(0.62)\left(\frac{PF_2 \, x \, HA_2}{IE_2}\right) =$$

$$ETWU_3 = (43)(0.62)\left(\frac{PF_3 \, x \, HA_3}{IE_3}\right) =$$

$$ETWU_{SLA} = (43)(0.62)(SLA) =$$

| Sum of ETWU | |
|---|---|

Estimated Total Water Use =_____ gallons.

## SECTION C. COMPARISON OF ETWU AND MAWA

Use this section to compare the calculated ETWU to the MAWA. The calculated ETWA may not exceed the calculated MAWA.

MAWA = _____ *[from Section A]* > ETWU = _____ *[from Section B]*

# EXAMPLE WATER BUDGET CALCULATION

## SECTION A. MAXIMUM APPLIED WATER ALLOWANCE (MAWA)

**Table A-1. Hydro Zone Area Information**

| Plant Water Use Type | Plant Type | Hydro Zone Area *square feet* |
|---|---|---|
| LW | Native Garden | 1,500 |
| MW | Boxwood | 500 |
| MW | Roses | 500 |
| HW | Turf | 1,000 |

**Summary of Hydro Zone Area Information**

| Plant Water Use Type | | Area *square feet* |
|---|---|---|
| Sum of LW Areas | | 1,500 |
| Sum of MW Areas | | 1,000 |
| Sum of HW Areas | | 1,000 |
| Sum of Special Landscape Areas | *[use this value for Table A-2]* | 0 |
| Sum of all Landscape Areas | *[use this value for Table A-2]* | 3,500 |

**Table A-2. Input Values for the MAWA Calculation**

| ETo *inches* | Conversion Factor | Landscape Area (LA) *square feet* | Special Landscape Area (SLA) *square feet* |
|---|---|---|---|
| 43 | 0.62 | 3,500 | 0 |

Calculations:

MAWA = (43) (0.62) [(0.7 x LA) + (0.3 x SLA)]

= (43) (0.62) [ (0.7 x 3,500) + (0.3 x 0)]

= 65,317

Maximum Applied Water Allowance = 65,317 gallons per year.

## SECTION B. ESTIMATED TOTAL WATER USE (ETWU)

**Table B-1. Plant Factor and Irrigation System Information**

| | Plant Water Use Type | Plant Type | Plant Factor (PF) | Hydro Zone Area (HA) *square feet* | Irrigation Method | Irrigation Efficiency (IE) *[minimum of 70%]* |
|---|---|---|---|---|---|---|
| 1 | LW | Native Garden | 0.3 | 1,500 | D | 0.85 |
| 2 | MW | Boxwood | 0.5 | 500 | S | 0.80 |
| 3 | MW | Roses | 0.5 | 500 | D | 0.85 |
| 4 | HW | Turf | 0.8 | 1,000 | S | 0.65 |
| *SLA* | SLA | NA | 1.0 | 0 | NA | NA |

Calculations:

$$ETWU_1 = (43)(0.62)\left(\frac{PF_1 \, x \, HA_1}{IE_1}\right) \qquad ETWU_1 = (43)(0.62)\left(\frac{0.3x1{,}500}{0.85}\right) \qquad = 14{,}114$$

$$ETWU_2 = (43)(0.62)\left(\frac{PF_2 \, x \, HA_2}{IE_2}\right) \qquad ETWU_2 = (43)(0.62)\left(\frac{0.5x500}{0.80}\right) \qquad = 8{,}331$$

$$ETWU_3 = (43)(0.62)\left(\frac{PF_3 \, x \, HA_3}{IE_3}\right) \qquad ETWU_3 = (43)(0.62)\left(\frac{0.5x500}{0.85}\right) \qquad = 7{,}841$$

$$ETWU_4 = (43)(0.62)\left(\frac{PF_3 \, x \, HA_3}{IE_3}\right) \qquad ETWU_4 = (43)(0.62)\left(\frac{0.8x1{,}000}{0.65}\right) \qquad = 32{,}812$$

$$ETWU_{SLA} = (43)(0.62)(SLA) \qquad ETWU_{SLA} = (43)(0.62)(0) \qquad = 0$$

| | |
|---|---|
| Sum of ETWU | 63,098 |

Estimated Total Water Use = 63,098 gallons.

## SECTION C. COMPARISON OF ETWU AND MAWA

MAWA = 65,317 > ETWU = 63,098

CITY OF MOUNTAIN VIEW

# CERTIFICATION OF INSTALLATION

Applicant Name: _____ Phone: _____ E-mail: _____

Project Site Address: _____

| Parameter | Requirements | Compliance |
|---|---|---|
| **Landscape** | Conforms with the Landscape Design Plan | ☐ Yes |
| **Irrigation System** | Conforms with the Irrigation Design Plan | ☐ Yes |
| | Performed system test and distribution uniformity | ☐ Yes |
| | Performed system tune-up to reduce overspray and runoff | ☐ Yes |
| | Prepared recommended irrigation schedule | ☐ Yes |

I certify that that, based upon periodic site observations, the landscape and irrigation system has been installed as specified in the Landscape and Irrigation Design Plans and complies with the criteria of the Water Conservation in Landscaping Regulations.

_____ _____

*Signature of Project Applicant or Authorized Representative* *Date*